

Grant's Pumped Storage Future

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Kevin M. Nordt

Director of Power Management

knordt@gcpud.org



Grant County
PUBLIC UTILITY DISTRICT
Excellence in Service and Leadership



Who is Grant County PUD

Consumer Owned Electric Utility

- 44,836 Metered Accounts
- Significant Industrial and Agricultural Load
- Peak Load 660 MW

Dedicated Resources

- Priest Rapids Dam – 955.5 MW – Multiple Purchasers
- Wanapum Dam – 1038 MW – Multiple Purchasers
- Potholes East Canal Project – 6.5 MW
- Quincy Chute Project – 9.4 MW
- Nine Canyon Wind Project – 12 MW

Today's Purpose

To examine some issues related to the potential development of a pumped storage project by Grant PUD.



What & Why

What:

- Grant is investigating 2 possible pumped storage opportunities.
 - First, is the development of The Bryant Mountain Pumped Storage Project, Klamath OR, in partnership with United Power Company and a large private infrastructure development partner.
 - Second, is the potential for a project located in the Mid-Columbia region.
 - Our interest is only in a modest amount of capacity (150 MW).

Why:

- Grant believes pumped storage provides a clean and flexible source of capacity that can enhance our existing resource portfolio, increase our ability to accommodate larger amounts of intermittent generating resource and aid in better transmission system operations.

Approach

- Partnership – Grant believes it will require a significant level of partnership in order to make acquisition of pumped storage capacity a reality.
- Partnership will be needed in both development and off-take arenas.
- Believe that a pumped storage project will need to be pursued as a multipurpose project (e.g. grid management device)
- It will require a long term revenue requirement compact to be built – recent FERC rulings could allow this.
- Grant does not see a viable pumped storage opportunity based upon energy shift value alone.

Where We Are Now

- We have done preliminary work on two options.
- Most of the focus has been on the Bryant Mountain Project.
- We have identified numerous generic benefits qualitatively but we have struggled with valuation of the specific alternatives.

Bryant Mountain Specifics

- An 1,175 MW generating capability.
- Closed Loop Project – off stream.
- 110 KAF lower reservoir.
- 60 KAF upper reservoir.
- 4 miles from Malin substation.
- 1280 feet of hydraulic head.
- Favorable L/H ratio (i.e., penstock length vs. head).

Upper Mid-C Specifics

- Potential exists between the Chief Joseph and Rocky Reach dams.
- Open Loop Project – lower reservoir is an existing forebay on the upper portion of non-federal MC system.
- All the benefits of stand alone PS but also huge potential to enhance the Fed and Non-Fed coordinated operations on the MC.
- The large number of current MC Parties (via Hourly Coordination Agreement) could make joint development “easier” here.
- Expect ~60 KAF upper reservoir.
- Favorable L/H ratio.

Major Valuation Issues

- No transparent (or even existent) long term markets for the output services are readily available.
- Small & relatively old data set regarding development costs leads to greater than desired uncertainty about capital costs.
- Establishing the P/S niche – risk of displacement from other approaches (e.g. “spill & burn”).
- Interactions from “Smart Grid” programs could lessen the need for a major balancing resource.

Other Issues

- In addition to the valuation difficulties mentioned earlier, P/S development also has us concerned over:
 - Long development time frame with associated market and political climate shifts.
 - Large size needed for economic enhancement will, for Grant, requires multi-party operation which complicates operations.
 - New & different licensing process.

Takeaways

- Grant is very positive on pumped storage.
- The flexibility it provides is likely to greatly enhance the existing resource base as well as provide for increased integration of intermittent renewable energy.
- However, the capital requirements, output size and project risks are such that current development paradigms are not likely to work.
- Development success will require strong regional partnership coupled with licensing and financing / revenue recovery incentives.

